USER MANUAL
Ionic boiler heating system

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Dear Costumer!

Thank you for purchasing our production. Carefully read the instructions contained in this instruction booklet. Before instalation, carefully read throught all terms and regulations of instalation. This Instruction contains information, wich must be known and used in expluatation period of this product.

1. After boiler installation, inform the user regarding its operation and give him this manual, which is an integral and essential part of the product and must be kept with care for future reference.
2. Installation and maintenance must be carried out by professionally qualified personnel, according to current regulations and the manufacturer's instructions. Do not carry out any operation on the sealed control parts
3. Incorrect installation or inadequate maintenance can result in damage or injury. The Manufacturer declines any liability for damage due to errors in installation and use or failure to follow the instructions.
4. Before carrying out any cleaning or maintenance operation, disconnect the unit from the power supply using the system switch and/or the special cut-off devices.
5. In case of a fault and/or poor operation, deactivate the unit and do not attempt to repair it or directly intervene. Contact professionally qualified personnel. Repair/replacement of the products must only be carried out by professionally qualified using original spare parts. Failure to comply with the above could affect the safety of the unit.
6. This unit must only be used for its intended purpose. Any other use is considered improper and therefore dangerous.
7. The images given in this manual are a simplified representation of the product. In this representation there may be slight and insignificant differences with respect to the product supplied.
8. Information included it this booklet, has been thoroughly checked, but we do not have any liability for any cartographical errors, technical or editors interpretation shown in images or translations of originals.

Ionic boiler “Beril” (further – boiler) is made for water heating for inhabited and uninhabited area closed autonomous heating systems, with conditions that these areas has insulation and ventilation (has no atmospheric precipitation or moisture condensation), outdoor air temperature is +40˚ C to -40˚ C, relative air humidity 98% at +25˚ C.

1. TECHNICAL SPECIFICATION

Rated power frequency (Hz)	50+/-1
Max outgoing temperature from boiler (C)	80
Usable heating liquid	„BERIL” vai „BERIL VIP”
Heating liquid capacity of the boiler consumed power1 kW (l)	15
Current	
Execution of the anti-humidity protection degree	IPX3 (protected against spatter)

Main dimensions and characteristics

Model	Rated voltage V	Rated power kW	Weight kg	Dimensions mm	Heated area, m3
BERIL 2,5	220	2,5	1,5	70x230	62,5
BERIL 3	220	3	1,0	70x230	75
BERIL 4	220	4	1,5	70x230	100
BERIL 5	220	5	1,0	70x230	125
BERIL 6	380	6	6,5	130x440	150
BERIL 9	380	9	6,5	130x440	225
BERIL12	380	12	6,5	130x440	300
BERIL 15	380	15	6,5	130x440	375
BERIL 25	380	25	6,5	130x440	625

2. PACKAGE

1. Boiler “Beril”
2. Boiler manual
3. Boiler packaging
4. CP “Beril” control unit or “BERIL” control module
5. Control unit or module packaging
6. CP “Beril” manual

3. SAFETY REQUIREMENTS

When installing the boiler heating system, it must be grounded.
Boiler conducting parts (clamps) must be protected.
Electrical power protection against power overloads and short-circuiting are made with an automatic switch to a power interruption, depending on the boiler capacity.
Must be strictly followed "PHASE-ZERO-GROUND"
Heating system threaded or welded joints must ensure airtight.
Not allowed water on the external surfaces of the boiler.
To the boiler service is admitted to persons who are older than 18 years old, who know the boiler design and the provisions of the boiler.

It is prohibited to use boiler without an expansion tank, and when in the heating system is frozen water.
The manufacturer boiler duration is 10 years from the date of connection of the boiler, if the consumer complies with those requirements and recommendations that are set out in this manual. All responsibility for any consequences that may occur when operating the boiler after the specified expiry of boiler, switches to the consumer.
The consumer may agree with the producer (seller) boiler usage extension.

4. INSTALLING AND PREPARING

Warning! Secure boiler functioning depends on proper installation and connection.
Installation and connection of the consumer must be reconciled in the following instances:

- **Electrical energy supply company whose electric networks are used for connecting the boiler;**
- **Local electric power monitoring instance;**

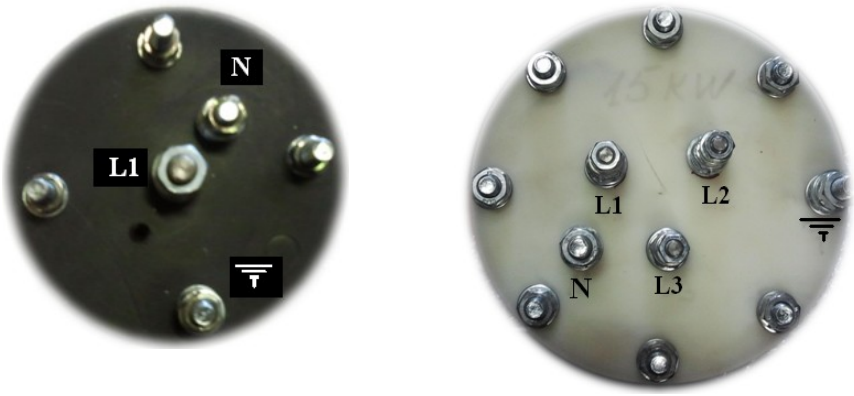
HEATING SYSTEM
Installing a heating system must comply with the purity of the pipeline to remove metal shavings and other foreign matter from entering the pipelines. When installing the system the coarse treatment filter is installed. After installation, the system must be thoroughly rinsed, it is advisable to use inhibitors "Beril".

Set the boiler. In the heating system the boiler is set vertically. Protection cap must be placed at the bottom.

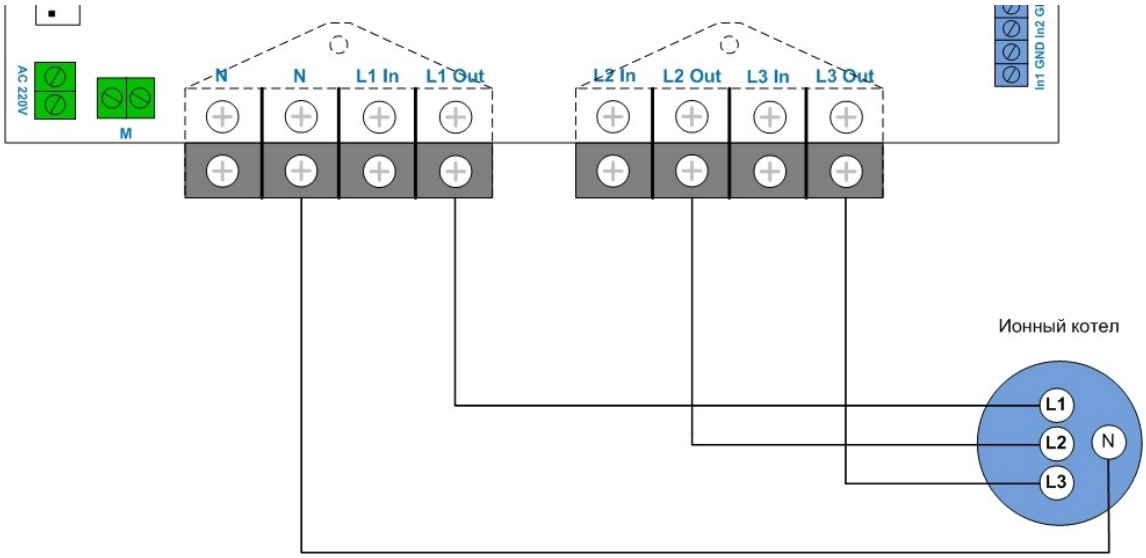
Using this system with cast iron radiators is not recommended.

Heating systems implementation and installation, as well as the boiler installation in the system, start and adjustment should be executed by specialized organizations with appropriate licenses, as well must be fulfilled ticket attached to manual.
BOILER ELECTRICAL CONNECTION
Boiler electrical connection must be executed by persons, who have permission to work with electric systems with 100 W, in order that is strictly defined.
Heating system must be grounded.
Grounding resistance must not be less than 0,1 Om.
All electric works must be executed using multicore, copper wire with crosscut adequate to power loads.
Wires, used for connection must be carefully cleaned, also from oxide layer.
Power wires must be connected using connectors, which has anti-corrosion coating, and are cleaned from stratification

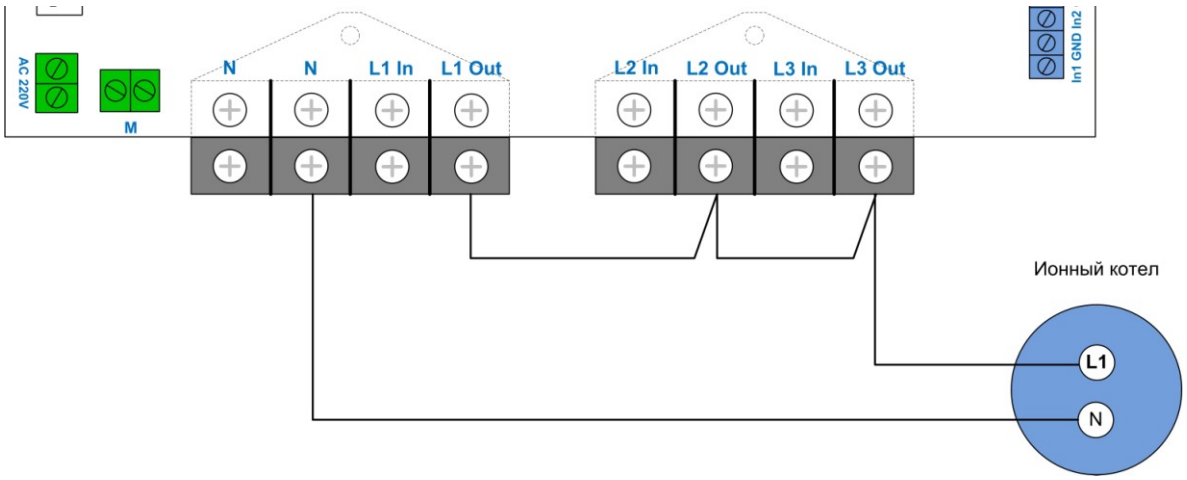
a) Connection with control unit CP



Picture 1. Electrical connections for boiler “Beril”

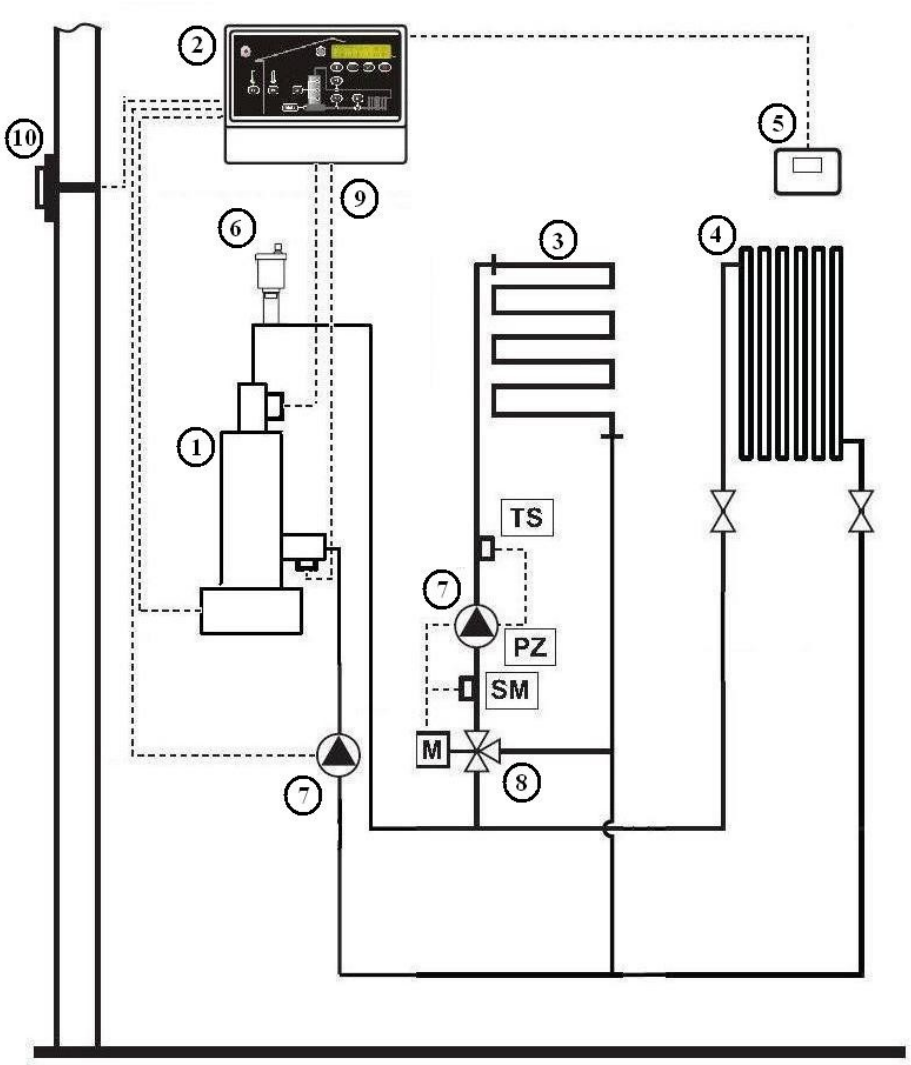


Picture 2. 3 phase boiler “Beril” electrical connection with control panel ERTC-3-33 .

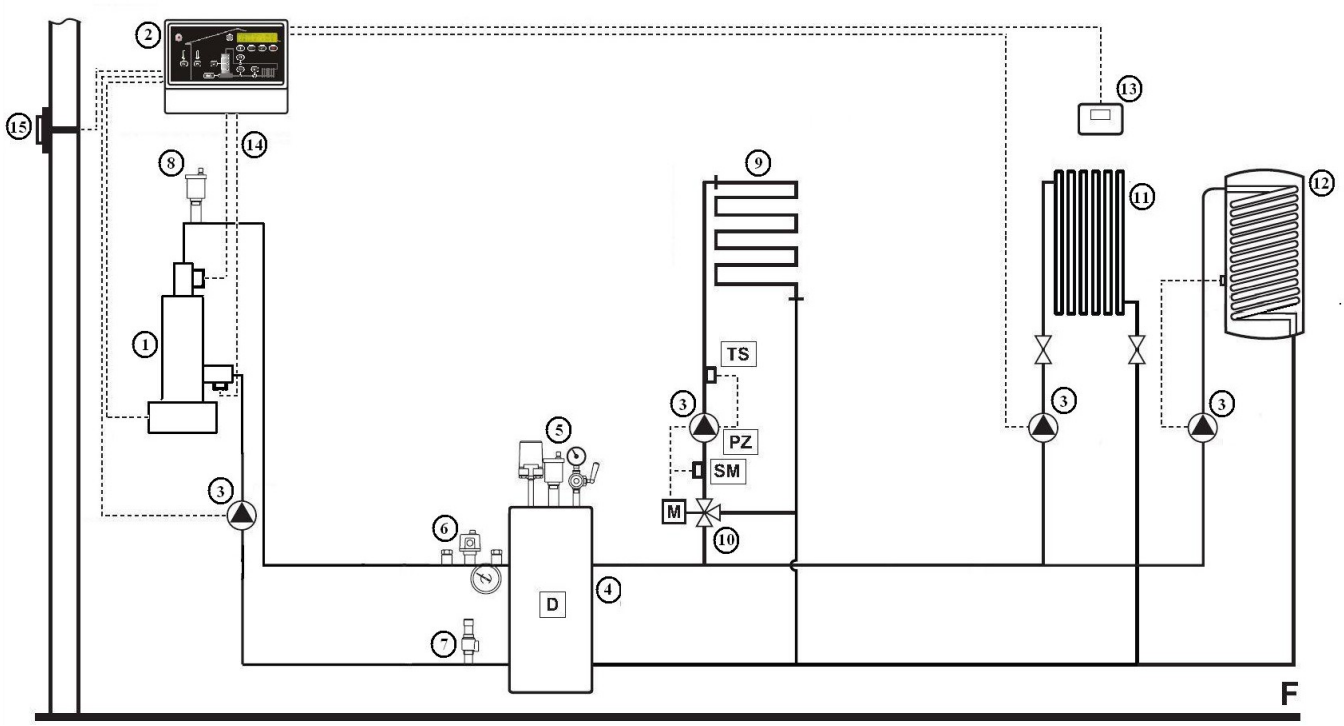


Picture 3. 1 phase boiler “Beril” electrical connection with control panel ERTC-3-33 .

Motual connections with heating system, heated floors, radiators and water heaters.



1. Boiler "Beril".
2. Control panel "Beril".
3. Heated floors.
4. Radiators.
5. Inside temperature controller.
7. Circulation pump
8. Three-way valve.
9. Connections of sensors.
10. Mounting element.



1. Boiler “Beril”.
2. Control panel "Beril”.
3. Circulation pump.
4. Hydrophores.
5. Safety group.
6. Armature.
7. Filling valve.
8. Safety group.
9. Heated floors.
10. Three-way valve.
11. Radiators.
12. Combined water heater.
13. Inside temperature controller.
14. Connections of sensors.
15. Mounting element.

5. IT IS FORBIDDEN TO USE BOILER:

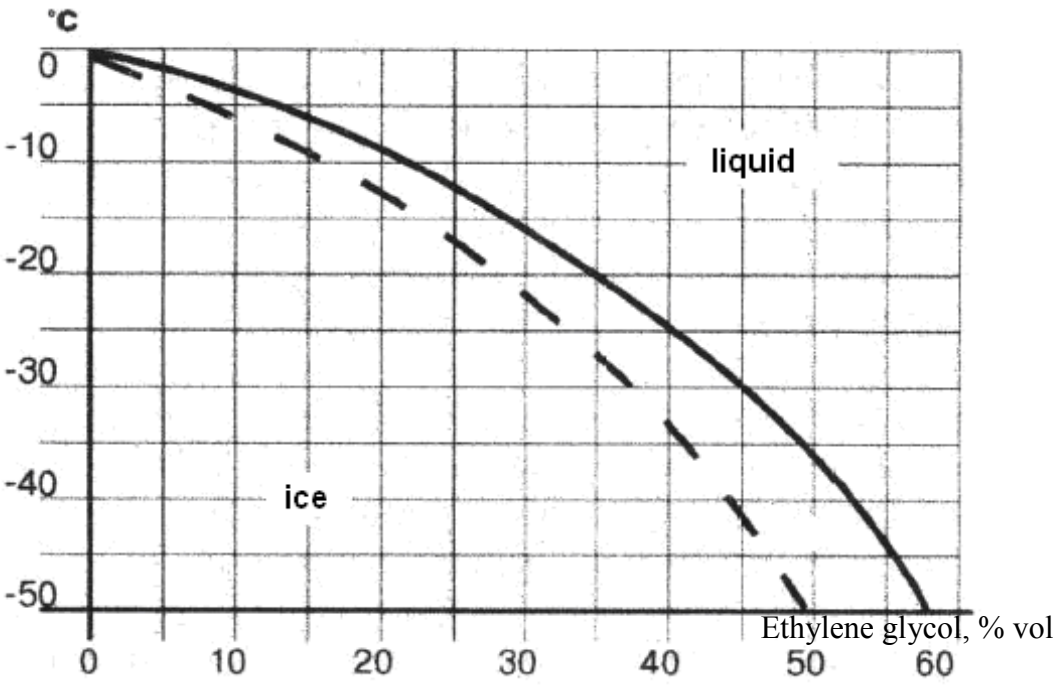
- without grounding and zero wiring
- without automatic switch (protection device)
- in explosive and flammable areas
- in rooms with particular moisture (condensation on the ceiling and walls)
- in rooms with current-conductive dust
- in rooms with chemically active environment
- fully or partly locked isolating valves at boiler input or output without using safety group (protection valve, manometer, automatic air output device) heating systems with membrane expansion tank

6. HEATING LIQUID MANUAL

In heating system for boiler **"Beril"** must be used **only** specially for this boiler made heating liquid **"Beril"** based on ethylene glycol or **"Beril V.I.P."** based on Propylene glycol.
Using regular water in heating system, even if complies with requirements of the standard **EN 26461-1** **"drinking water"**, can cause unintended consequences:

- water freezing in heating system if the air temperature is negative, this could cause heating system damage
- corrosion of heating system constructing elements
- Internal heat transfer surface organic antifouling, which negatively affects whole heating system technical status and working capacity.

Heating liquid **"Beril"** or **"Beril V.I.P."** Other heating liquids and antifreeze usage in heating systems with boiler **"Beril"** can lead to emergency situation, because of their inadequacy (electric resistance) for boiler technical parameters.
Company provides heating liquids **"Beril"** and **"Beril V.I.P."**, whose crystal formation (freezing) temperature is **- 30**° **C**. This temperature doesn't change using boiler for many years, only if heating liquid concentration says the same.



From the graph you can see that between crystal formation point and freezing point there are considerable temperature gap, in were there are both phase conditions – liquid and ice crystals – and there are no “burst” effect.

Thanks to this quality, the heating system is not subjected to damage in the time of un freezing, as it would be using water. Company made heating liquid final freezing temperature is **- 45° C**. heating liquids **“Beril”** and **“Beril V.I.P.”** has added special additives, which slows corrosion of metals, prevents compactor damage (rubber, Teflon) and scale formation on heater.

Heating liquid **“Beril V.I.P.”** are made on base of Propylene glycol used in grocery products, like shampoo, medicinal products, cosmetics, animal food and non-alcoholic drinks. Thanks to its environmental cleanliness heating liquid **“Beril V.I.P.”** can be used in dual-contour heating systems, without fear from result, if the heating liquid gets in the drinking water.

When using heating liquid **“Beril”** or **“Beril V.I.P.”** in heating system, it is useful to pour out heating liquid from system to prevent system silting, filter it (trough the multi-layer gauze or filter paper), rinse the heating system and fill it up with the filtered heating liquid.

To increase boiler and whole heating system lifetime, as wall as to increase its efficiency, we recommend to combine system rinse with boiler prophylaxis, cleaning boiler heaters to metal shine, removing installed electric unit.
If the heating liquid evaporates from your systems expansion tank, just add appropriate amount of boiled water. In time the intensity of special additives decreases, because of the continuous entering of oxygen in system from surrounding environment. It is recommended to change heating liquid in every 3 years.
All heating system maintenance repairs must be executed with boiler shut down.

7. POSSIBLE DEFECTS AND PREVENTING METHODS.

9. Boiler doesn't switch on, automatic protection is triggered	1. Short-circuiting in Electricity Grid caused by wrong connection 2. Check flow trough the boiler.	1. Call electrician to check connected system compliance with "CP setting and operating manual" and this "User manual".
2. Heating system doesn't warm up (warms up poorly)	3. Temperature of heating is set too low. Boiler and radiator connection schemes don't compliance with schemes shown in this manual. There is air in heating system, caused by wrong connection. Inadequacy of the boiler power and the power of heating system (pipes, radiators, convectors).	2. Increase temperature. Adjust connection schemes according to schemes that are shown in this manual. Prevent mounting mistakes; add heating liquid using leak valve under pressure. Adjust boiler power to heating installation power.
3. Room where the heating system is mounted doesn't warm up enough.	3. All heating system installation power must be 15 – 20 % higher than building heat losses.	3. Test building heat balance accuracy
4. Boiler uses rated power, but heating is going only to closest boiler pipe.	4. Disturbed heating liquid circulation in heating system.	4. Clean and carefully rinse heating system, recommended to use for this purpose inhibitor "Beril". Use ragged filter, cleaning it periodically.
5. Boiler is losing power	5. Inside of boiler may be dirt, rust etc.	5. Clean boiler heaters to metal shine, removing installed electric unit.

8. WARRANTY

1. Boiler service warranty period applies to all the working time.
2. Warranty does not work (reclamation for boiler work will not be accepted, free repair or change will not be done) in following cases:
   - Electricity grid doesn't comply required
   - one of the boiler heating element seals is damaged;
   - heating system realization and installation, and its connection to system wasn't done by specialized organization without according licenses.
   - Violated requirements and recommendations mentioned in this manual
3. If customer wishes, the heating system with boiler "Beril" is installed and further system service is done by licensed expert.

1. STORAGE AND TRANSPORTATION TERMS

Boiler must be stored in closed space with natural ventilation, where temperature and humidity is significantly lower than in the open air in temperate and cold climate regions, with temperatures from +40 ° C to -50 C at a relative humidity of not more than 80% at temperature +25 C.

Equipment can be transported by any closed transport, according to measures for bursting loads.

Sales statement:
Electrical ionic boiler "Beril" is in conformity with 73/23/EEC and 93/68/EEC

Seller's stamp:

Sold:

Sales date:

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